Regional Water Quality Control Board
Central Valley Region
Board Meeting -15/16 March 2007

Response to Written Comments for Grizzly Lake Resort Improvement District
Delleker Wastewater Treatment Plant
Tentative Waste Discharge Requirements

The following are responses to written comments received from interested parties in response to the Tentative Waste Discharge Requirements (NPDES No. CA0081744) for the Grizzly Lake Resort Improvement District (GLRID) Delleker Wastewater Treatment Plant issued on 20 September 2006. Written comments from interested parties on the tentative Order were required to be received by the Regional Water Quality Control Board (Regional Water Board) by 22 October 2006 in order to receive full consideration. Comments were received by the due date from the California Sportfishing Protection Alliance (CSPA) Written comments from CSPA are summarized below, followed by the response of the Regional Water Board staff (Staff).

**1. The discussion of Electrical Conductivity (EC) does not acknowledge that there is no assimilative capacity for the wastewater discharge and fails to contain an Effluent Limitation in violation of Federal Regulation 40 CFR 122.44.**

**RESPONSE**
There is currently only one data point for wastewater treatment plant (Plant) effluent EC. In addition, there are only a few values available to determine whether the EC objective is exceeded in the receiving water. With the data available, there is some assimilative capacity for EC in the River, contrary to CSPA's statement. The water quality objective for the River is 150 umhos/cm *as a 90$^{th}$ percentile in well mixed waters of the Feather River* (emphasis added). Because the highest EC measured by the GLRID has been 150 umhos/cm, the current data demonstrates that the 90$^{th}$ percentile EC in the receiving water is less than the water quality objective. Without additional data, it is difficult to quantify exactly how much assimilative capacity is available. Based on the current information the discharge does not appear to cause or permit an exceedance of the applicable water quality objective. The tentative Order, however, calls for routine monitoring for receiving water EC. The Order includes a reopener to include an effluent limitation for EC if necessary.

The tentative Order does not authorize any increase in discharge flow or concentration. The tentative Order does require a salt reduction study.

**2. The proposed Permit grants a mixing zone for pathogens, turbidity and dissolved oxygen in violation of Federal Regulation 40 CFR 122.44 and CWC13377; the receiving water sampling is incapable of detecting violations of Receiving Water Limitations.**

**RESPONSE**

The State Implementation Policy (SIP), the Basin Plan, and 40 CFR 122.44 (at item (d)(ii)) all allow the use of dilution credits in establishing permit conditions. This Order complies with CWC 13377, which requires waste discharge requirements to implement the Clean Water Act and the Basin Plan, to protect beneficial uses, and to prevent nuisance conditions.

This comment appears to be based on the assumption that the mixing zone has been established for each of the above constituents without an analysis justifying the zone, and that, because of the configuration of the effluent discharge piping, there will be little initial mixing of effluent in the River.

There is sufficient mixing of effluent in the River to protect beneficial uses. The effluent line discharges to the River at its bank, and there is no effluent diffuser. However, the River will be moderately turbulent in this area because the outfall discharges at the outside of a meander bend, where significant turbulent and erosive forces occur. Some nearly instantaneous mixing of the effluent will result; best professional judgment by Staff allows the assumption of a dilution of at least 10:1 in the area of the outfall, which is less than four per cent of the ultimate dilution in the River, even at maximum effluent discharge rate and minimum River flow required for discharge. Given that the ultimate dilution in the River exceeds 260:1, with worst-case conditions of effluent flow and River flow, this assumption is conservative; therefore a dilution credit of 10 has been used for turbidity and dissolved oxygen.

In addition, in response to the comments of CSPA, Staff reviewed the use of a mixing model that is commonly used in the State of Washington for its NPDES permits. The model is applicable to point discharges where rapid vertical mixing occurs. At low flow in the receiving water, the river is approximately 40 feet wide and approximately one foot deep, so the assumption of rapid vertical mixing is valid. This model predicts that a dilution of 10 to 1 is achieved within 30 feet, or less, downstream of the outfall and at a distance of less than one foot from the River bank. It is also of note that dilution at two feet or more from the river bank exceeds 35:1 in accordance with the model. According to the documentation supplementing the mixing model spreadsheet, the model is based on *Mixing in Inland and Coastal Waters* by H.B. Fischer et al. (1979, Academic Press Inc.)

The information above has been added to the Fact Sheet.

The following factors provide additional protection of the beneficial uses of the River: 1) the discharge is seasonally restricted; discharge occurs only during the non-recreational season, when human contact is minimal. Recreational contact in this area at any time would be unlikely at low flows as the River is very shallow during this time; 2) high oxygen concentrations during discharge (discharge occurs when dissolved oxygen levels in the effluent and receiving water will be higher than average due to cooler temperatures in the effluent and the River); and 3) the absence of drinking water intakes near the discharge. There is no specific water quality objective for total coliform, or pathogens, and the memorandum from the Department of Health Services regarding effluent disinfection levels is only guidance. In the professional judgment of Staff, an effluent limit of 23 MPN/100 mL for coliform is adequately protective of the beneficial uses of the receiving water.

The commenter also states that, “The proposed permit discusses in great detail that the Discharger has been unable to meet a total suspended solids (TSS) Effluent Limitation of 45

mg/L." The tentative Order does not state that the Discharger cannot meet the 45 mg/L effluent limitation for TSS; the Order does state that the Discharger has sometimes been unable to meet the requirement for 65 percent TSS removal. As noted above, the influent wastewater tends to be of lower than average strength in the rainy season due to I/I problems. Partially due to that low strength, the Discharger has been able to meet effluent limitations for TSS concentrations despite occasionally inadequate percentage removals. In addition, the Discharger has not been including the BOD and TSS load contributions from their receipt of septage in their calculations of percent solids removal, although the contribution of solids from septage is substantial. When the added septage load is included in percentage removal calculations, it is anticipated that the Discharger will comply with the required TSS percentage removal.

To further assure that monitoring can detect violations of receiving water limitations, Monitoring Station RSW-002 has been moved downstream of the outfall to a distance equal to the width of the River, and to within one foot of the bank on the discharge side of the river.

**3. The proposed Permit fails to contain an Effluent Limitation for bis (2-ethylhexyl) phthalate in violation of the California Toxics Rule, Federal Regulations (40 CFR 122.44), the California Water Code (CWC), Section 13377, and the States Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP).**

**RESPONSE**
Bis (2-ethylhexyl) phthalate is a plasticizer that has been repeatedly detected in samples throughout the State, both in receiving waters and in many facility effluents. It is unlikely that it is actually present in the source water at detectable concentrations. When samples have been collected and processed with minimal plastics contact, the pollutant rarely has been detected. Use of glass sampling containers has been successful in reducing false positives. At the Plant, the pollutant was detected one time in the effluent in a 2002 sampling; therefore the data is particularly suspect because of its age. If bis (2-ethylhexyl) phthalate continues to be detected in the receiving water, or in the effluent, at a concentration above its criteria, the Order will be reopened to establish an effluent limit. A reopener has been added to the Order for bis (2-ethylhexyl) phthalate.

**4. The proposed Permit fails to contain an Effluent Limitation for mercury in violation of the California Toxics Rule, Federal Regulations (40 CFR 122.44), the California Water Code (CWC), Section 13377, and the States Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP).**

**RESPONSE**
Mercury levels in effluent and receiving water were erroneously given in units of ug/L in the Fact Sheet; the units should have been given as ng/L (nanograms per liter). There is no reasonable potential for exceedance of mercury criteria. This error has been corrected in the Fact Sheet.

**5. The proposed Permit does not contain an Effluent Limitation for ammonia in violation of Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.**

**RESPONSE**
The tentative Order prohibits discharge from May 16 to October 31. Ammonia toxicity to early life stage salmonids, as well as to other aquatic species, is dependant upon water temperature and pH; toxicity increases as pH or temperature increase. At the highest measured pH in the River near the treatment plant (7.9 s.u.) and the highest measured temperature in the receiving water during this last year (61 degrees F), the water quality objective for ammonia is 2.54 mg/L (criterion continuous concentration 30 day average), and the criterion maximum concentration is 6.8 mg/L.

Total nitrogen concentration (the sum of organic nitrogen, ammonia, nitrate, and nitrite) in the effluent is expected to be 40 mg/L or less because: 1) significant dilution occurs from Infiltration/Inflow, especially during the months that wastewater is discharged (during the rainy season); and 2) nitrogen is sequestered to a degree in pond sludge. Some nitrification of the waste is likely to occur because of the long sludge residence time of the ponds. Mineralization of influent nitrogen in the ponds (conversion of organic nitrogen to ammonia; nitrogen in the wastewater influent will primarily be in the form of organic nitrogen) will generally be less than complete, leaving some organic nitrogen in the effluent.

Both the SIP and the Basin Plan authorize acute toxicity mixing zones. CSPA has discussed in detail the requirements of a mixing zone in their comments. In accordance with the SIP, and as referred to by CSPA:

> "A mixing zone shall not:
> (1) compromise the integrity of the entire water body;
> (2) cause acutely toxic conditions to aquatic life passing through the mixing zone;
> (3) restrict the passage of aquatic life;
> (4) adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;
> (5) produce undesirable or nuisance aquatic life;
> (6) result in floating debris, oil, or scum;
> (7) produce objectionable color, odor, taste, or turbidity;
> (8) cause objectionable bottom deposits;
> (9) cause nuisance;
> (10) dominate the receiving water body or overlap a mixing zone from different outfalls; or
> (11) be allowed at or near any drinking water intake.

In addition, the Basin Plan at IV-16.00 states,

> "In conjunction with the issuance of NPDES and storm water permits, the Regional Water Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Water Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives,

> human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Water Board will consider the applicable procedures and guidelines in EPA's Water Quality Standards Handbook and the Technical Support Document for Water Quality-based Toxics Control. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge."

The acute toxicity mixing zone complies with both the SIP and the Basin Plan, even though ammonia is not a CTR constituent and not necessarily subject to the SIP (Regional Water Board Staff adhere to the SIP for all pollutants unless there is a specific rational not to do so). Because ammonia is not a CTR constituent, a dilution credit can be used to determine reasonable potential for ammonia toxicity.

Given the above River temperature and pH, effluent ammonia would have to exceed 25 mg/L to violate the criterion continuous concentration 30-day average. To violate the 1-hour maximum concentration, the effluent ammonia would have to exceed 68 mg/L. Over the last five years, the maximum measured effluent ammonia concentration has been 10 mg/L Therefore, after initial dilution of the effluent in the River, assuming a dilution credit of 10, it is highly unlikely that ammonia beyond the mixing zone will reach toxic levels. Much of the above information has been added to the Fact Sheet.

In addition, effluent toxicity is directly measured by the existing acute and chronic toxicity testing requirements.

**6. The proposed Permit does not contain an Effluent Limitation for nitrate and nitrite in violation of Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.**

**RESPONSE**
The maximum contaminant level (MCL) for nitrate, 10 mg/L as N, will not be exceeded at the edge of the mixing zone described above unless effluent nitrate is greater than 100 mg/L, which is essentially impossible due to the strength of the domestic wastewater treated by the Discharger (see previous response). Similarly, effluent nitrite would have to exceed 10 mg/L to cause an exceedance of its MCL (1 mg/L); nitrite is normally a short lived intermediary in the nitrification process, and is not generally expected to be present in concentrations exceeding 1 mg/L, let alone 10 mg/L. Certain conditions in the ponds, such as very low temperatures, could cause the nitrite-to-nitrate step in the nitrification process to become rate limited, resulting in a buildup of effluent nitrite. However, by the time the ponds reach this low temperature, flow in the River is very often much greater than the minimum of 40 cfs required for River discharge.

The wastewater will be diluted in the River at a much greater than 10:1 dilution (the fully mixed dilution is at least 260:1, as earlier indicated) prior to any withdrawal for drinking water.

In consideration of this information, there is no necessity for the establishment of an effluent limitation for nitrate or nitrite. The above information has been added to the Fact Sheet.

**7. The proposed Permit does not contain an Effluent Limitation for oil and grease in violation of Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.**

**RESPONSE**
The wastewater treatment plant service area does not have any unusual sources of oil and grease; commercial users are limited, and there are no known industrial users. The tentative Order contains receiving water limitations that implement the Basin Plan's prohibition on oil and grease that cause nuisance, result in a visual film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses. The 15 mg/L limitation cited by CSPA has been occasionally included in some past permits, without citation of a source, or justification. The origin of this limit is a 1974 USEPA guidance document for petroleum marketing terminals, not wastewater treatment plants. It would be inappropriate to establish an effluent limit on a wastewater treatment plant based on this guidance. Also, as stated above, the tentative Order already contains receiving water limitations that implement the Basin Plan's prohibition regarding oil and grease.

**8. The Proposed Permit Contains an Inadequate Reasonable Potential by Using Incorrect Statistical Multipliers which would result in Effluent Limitations for selenium and zinc in violation of Federal Regulation 40 CFR 122.44 (d)(1)(ii).**

**RESPONSE**
A reasonable potential analysis was conducted according to the SIP. The SIP procedures do not utilize statistical multipliers for predicting maximum effluent concentrations.

**9. The proposed Permit does not contain Effluent Limitations for chronic toxicity and therefore does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i).**

**RESPONSE**
The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of an NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. As a result of this petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012:

> "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have*

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

> *determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.*"

The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. The tentative Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

**10. The proposed Permit does not comply with the Board's Antidegradation Policy by failing to require an assessment of groundwater quality and for failing to provide tertiary treatment.**

The Order has been revised to require an assessment of groundwater quality.

Regarding the comment on the absence of tertiary treatment, please see the response to Item 11 below.

**11. The proposed Permit does not contain an antidegradation analysis as required by the State and Regional Board's Antidegradation Policy, the Clean Water Act and Federal Regulations which would show the Discharger is not providing best practicable treatment and control (BPTC) of the discharge.**

**RESPONSE**
State Board Resolution No. 68-16 requires in part that:

1) "High quality waters be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies; and
2) Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

The tentative Order contains effluent and receiving water limitations established to protect the River's present and anticipated beneficial uses and a provision for best practicable treatment or control. Discharge Prohibition III.c of the tentative Order prohibits the wastewater treatment and discharge from causing a nuisance as defined by the CWC.

The State Water Resources Control Board Antidegradation guidance (Administrative Procedures Manual 90-04), under the section on complete antidegradation analysis states:

"In general, an antidegradation analysis is needed to support all regulatory actions that, in the Regional Board's judgment, will result in a significant increase in pollutant loadings. The Regional Boards must consider antidegradation effects and conduct an antidegradation analysis when the proposed activity results in:

1. A substantial increase in mass emissions of a pollutant, even if there is no other indication that the receiving waters are polluted; or

2. Mortality or significant growth or reproductive impairment of resident species.

In particular, an antidegradation finding should be made and, if necessary, an analysis should be conducted when performing the following permit activities:

1. Issuance of a permit for any new discharge, including Section 401 certifications; or

2. Material and substantial alterations to the permitted facility, such as relocation of an existing discharge; or

3. Reissuance or modification of permits which would allow a significant increase in the concentration or mass emission of any pollutant in the discharge."

The tentative Order does not provide for any expansion from previously authorized discharge flows, and will not cause mortality or significant growth or reproductive impairment of resident species outside a very small mixing zone; the tentative Order therefore does not meet any of the above criteria for an antidegradation analysis. The tentative Order incorporates effluent limitations and requirements that are at least as stringent as in the previous permit. Therefore, a complete antidegradation analysis is not required for this tentative Order.

Limited degradation that does not cause exceedance of water quality objectives is warranted to allow for the economic benefit stemming from local growth. The discharge allows wastewater utility service necessary to accommodate housing and economic expansion in the area, and is considered to be a benefit to the people of the State.

Wastewater treatment meets the technology based effluent limits for pond systems as required in 40 CFR, Part 133. In addition, in accordance with 40 CFR section 122.44 and section 122.45 and CWA section 301(b)(1) the Regional Water Board has established a mixing zone and effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Compliance with the standards of the permit reasonably constitutes best practicable treatment or control in this situation.

**12. The MRP fails to monitor for odors during the most critical time of the year.**

**RESPONSE**
Operating experience at the plant has shown that odor complaints almost always occur in the spring, likely due to pond "turnover" caused by rising temperatures. Algae blooms in summer and fall could conceivably result in odor problems, but this situation has never been reported

at the plant or by businesses adjacent to the Plant. Due to the daily presence of staff at the treatment plant, odors would be noted during routine visits, so a change to the required monitoring would merely be pro forma.